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Delaware Bicycle Facility Master Plan *Executive Summary*



Delaware Department of Transportation

Nathan Hayward III
Secretary

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Division of Planning

Ralph Reeb
Director

Joseph Cantalupo, AICP
Assistant Director of Planning

Consultant Team

Whitman, Requardt and Associates, LLP
Primary Consultant

Michelle Robinson Architect

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Introduction

The Bicycle Facility Master Plan was developed in order to define and implement a statewide system of designated, on-road bicycle routes. By designating a system of routes, DelDOT will take advantage of the existing system of roadways to provide improved bicycle travel options. The Bicycle Facility Master Plan provides specific guidance as to the location and nature of “appropriate accommodations” along DelDOT-maintained roadways.

The overall purpose of the Plan is to recognize bicycling as an integral part of the transportation system and provide for suitable accommodations for bicycles on the statewide roadway network. Implementation of the plan will achieve the following goals:

- Integrate existing bicycle routes and trails to a larger, statewide bicycle network.
- Establish bicycle routes between municipalities, activity centers, and recreational areas throughout the state.

Role of the Plan

The Bicycle Facilities Master Plan provides DelDOT with three tools with which to design and construct a continuous statewide network of bicycle facilities:

- **A statewide network of on-road bikeways.** The plan designates a set of on-road bikeways which connect Delaware’s municipalities, activity centers, and recreational destinations.
- **A set of design recommendations for each type of bikeway.** These will guide DelDOT and developers, letting them know what types of facilities are expected along each DelDOT-maintained roadway.
- **An implementation plan that identifies roles for stakeholders.** Interviews with state agency staff and other stakeholders allowed DelDOT to distinguish DelDOT agency roles and roles for other stakeholders (Refer to Page 10 outline).

The Bicycle Facility Master Plan will be considered in conjunction with several other policies and programs including:

- DelDOT Rails-to-Trails Program
- Local and regional bicycle master plans
- DNREC’s Greenways and Trails Master Plan

Bicycle Facility Needs

In order to understand the specific needs of bicyclists in Delaware, a public outreach program was undertaken for this Plan. As part of this process, participants identified a set of basic facility needs which influence their decision whether or not they are willing to bicycle (or let their children ride bicycles) on roadways.

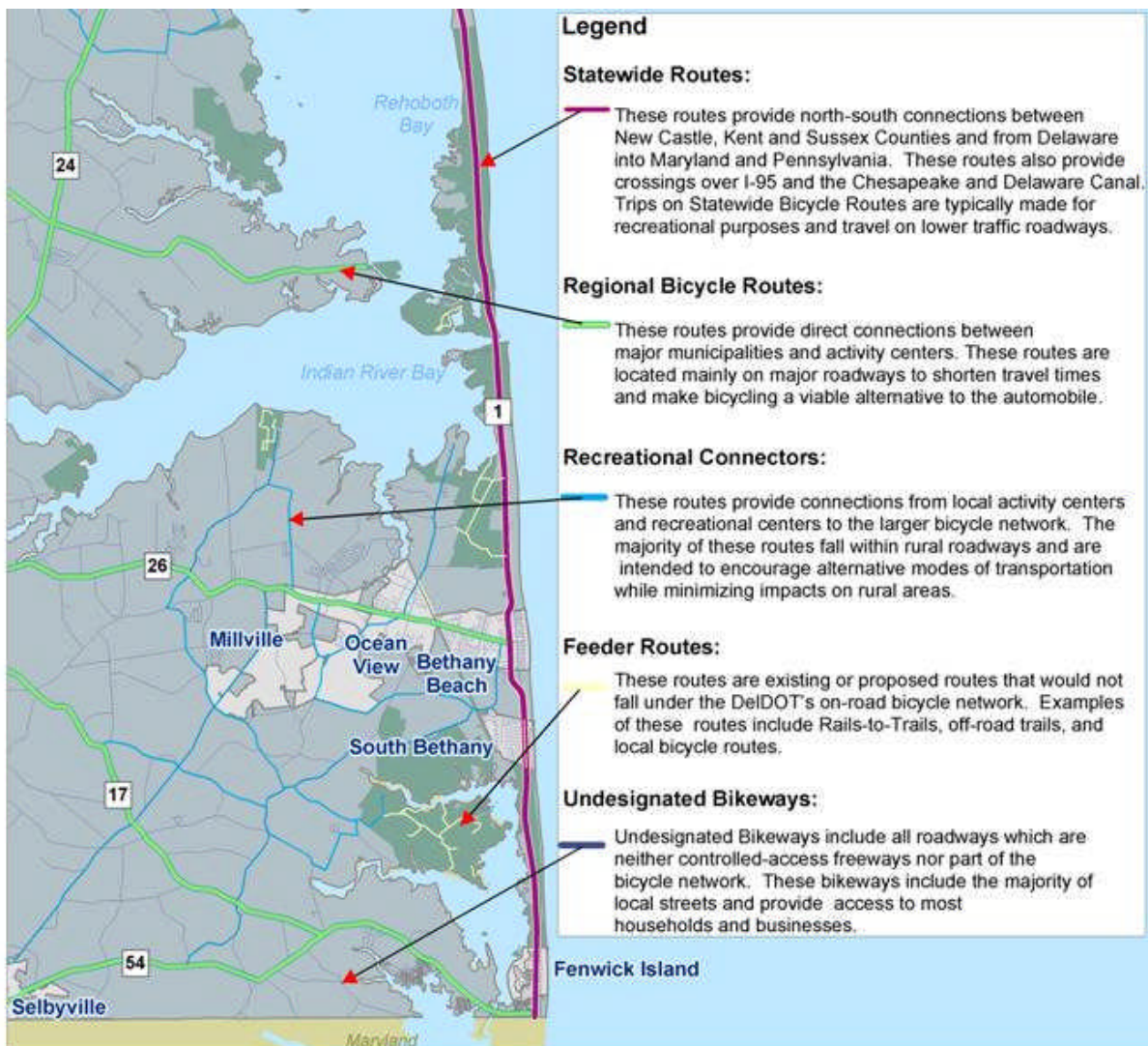
Those basic needs were:

- Clearly identified routes with consistently designed bikeways and signage.
- A continuous network of bikeways connecting to residences, activity centers and recreational destinations.
- Provision of safe crossings
- Additional consideration for the needs of children

Facility Recommendations

Route Recommendations

The proposed network will consist of a hierarchy of bikeways, covering a range of mobility needs.



Design Recommendations

The routes in the statewide bicycle network will be improved incrementally as part of the regular cycle of DelDOT road construction and maintenance. Roadway projects with planned bicycle facilities will be based on the new bicycle facility design guidelines established in both the Facility Plan and the Road Design Manual. Some of the facilities which will be improved include:

- **Bikeways.** For each type of designated bicycle route there are required and preferred bicycle facility features which should be installed. (See below) In satisfying the required features, Statewide, Regional, and Recreational Connectors bicycle routes can be built as bike lanes, shared shoulders, or wide outside travel lanes as determined by DelDOT staff. Refer to Page 4 for descriptions of bikeway types.
- **Traffic Controls.** Traffic Controls may include signage, lane striping, bike lane symbols, and traffic signals. The Plan provides specific guidance as to the usage and placement of traffic controls along bikeways.
- **Intersection Treatments.** The Plan details how striping, signage, and other bicycle facility improvements should be treated at intersections.
- **Bridge Treatments.** Delaware's bridges represent one of largest challenges to providing continuous bicycle routes. The design recommendations for bridge treatments are intended to enhance the safety of bicyclists.
- **Interchange Treatments.** Bikeways crossing interchanges should be designed to minimize the conflict points between automobile traffic and bicyclists.
- **Other Design Considerations.** The Plan also establishes guidance on drainage inlet grates, utility covers, and railroad crossings that are compatible with bicycling.

Bicycle Facility Features by Facility Master Plan Route Type	Type of Bicycle Routes	Statewide Bicycle Route	Regional Bicycle Route	Recreational Connector
R = Required P = Preferred				
Minimum Facility Width		5'	5'	5'
Facility Improvements				
Bike Route Number Signs		R	R	n/a
Warning & Regulatory Signs		R	R	R
Bicycle Symbols		R	R	P
Bicycle Friendly Drainage Grates		R	R	R
Right angles railroad crossings		R	R	R
Utility Covers out of path or flush		R	R	R

Description of Bikeways:

Bike Lane. Design guidelines include a 5 foot minimum lane width (4 foot if no curb is present) with striping, bike symbols, and route designation. Warning and regulatory signage shall be provided. The guidelines for Bike Lanes establish preferential use by bicyclists.



Bike Lane

Shared Shoulders. The paved shoulder should be a minimum of 5 feet wide. (4 foot if no curb is present) Includes some signage and bicycle symbols. This bicycle facility is intended to be shared by bicyclist and motorists. A shared bikeway maintains emergency use of the shoulder for motorist breakdowns/emergencies while providing a facility for bicyclists separated from the travel lane. Parking on shoulders should be prohibited.



Shared Shoulder

Wide Outside Travel Lane. The guidelines include a 14 foot wide outside travel lane to be shared by motorists and bicyclists. Warning and regulatory signage may be included but no striping shall be provided. This bikeway is most applicable for roadways with low speeds and lower traffic volumes and is intended for more advanced bicyclists.



Wide Outside Travel Lane

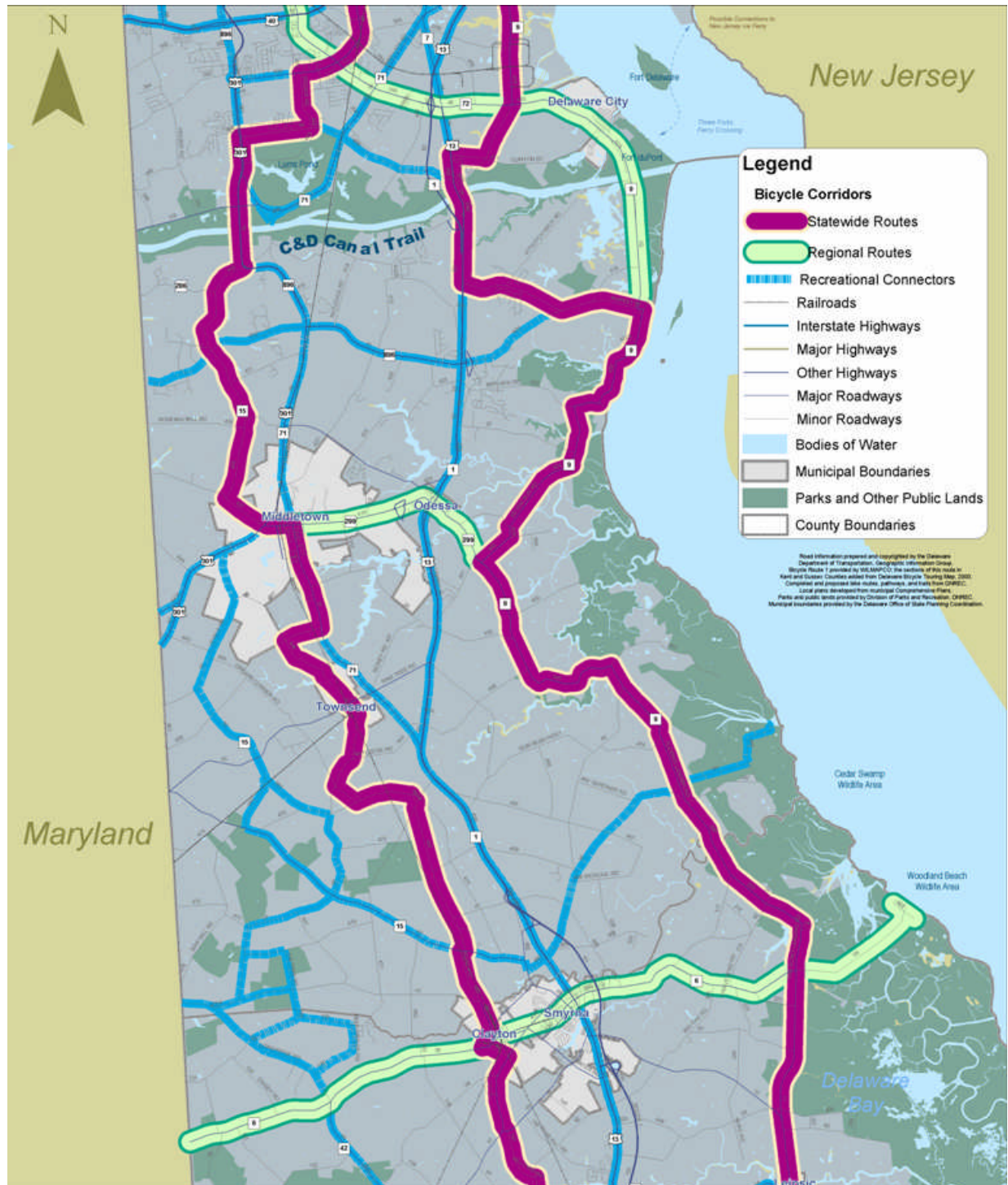
Northern New Castle County **Statewide Bicycle Routes, Regional Bicycle Routes, and Recreational Connectors**



The Plan recommends 126 miles of Statewide Bicycle Routes, 71 miles of Regional Bicycle Routes, and 301 miles of Recreational Connectors in New Castle County.

Southern New Castle County

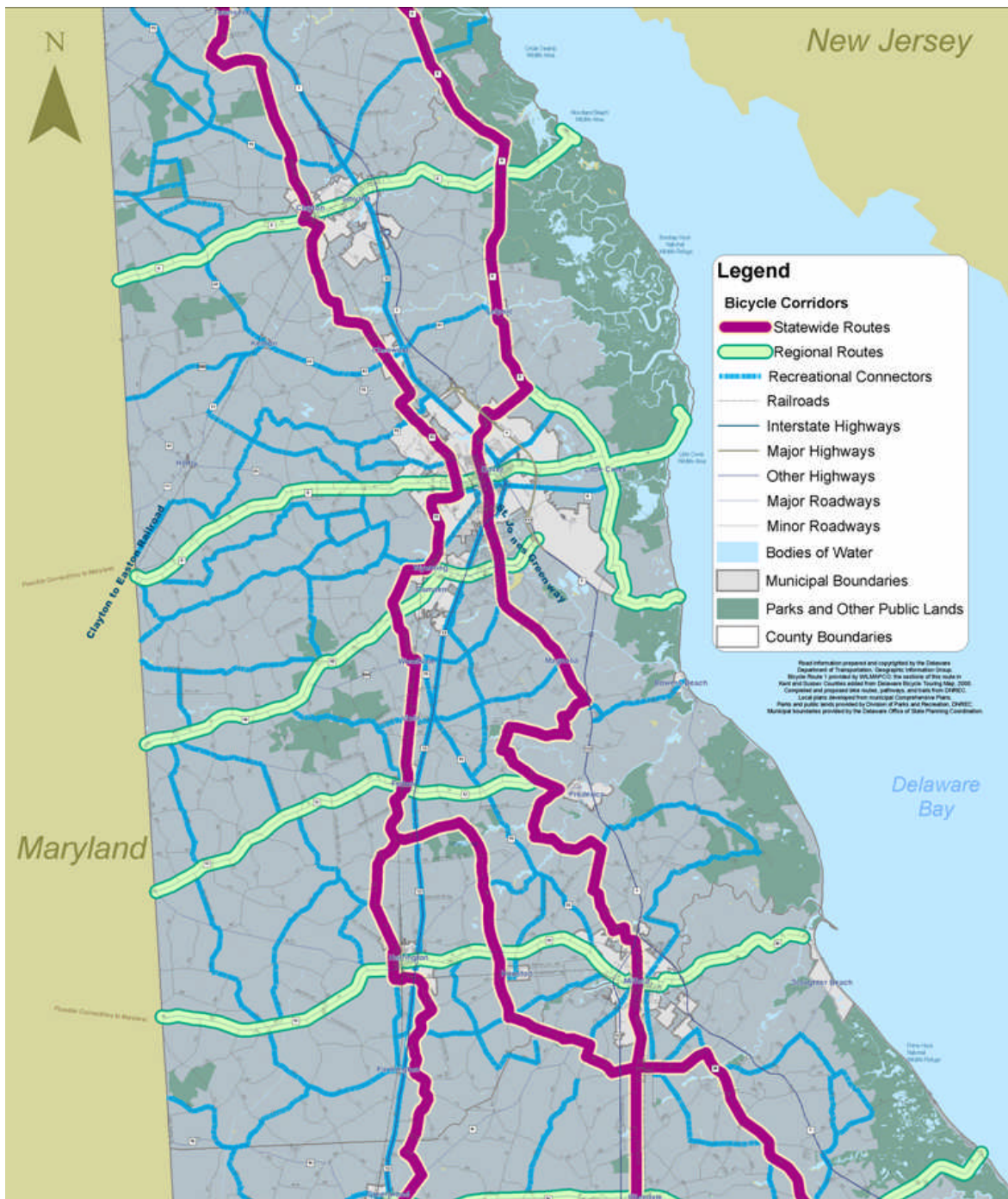
Statewide Bicycle Routes, Regional Bicycle Routes, and Recreational Connectors



The Plan recommends 126 miles of Statewide Bicycle Routes, 71 miles of Regional Bicycle Routes, and 301 miles of Recreational Connectors in New Castle County.

Kent County

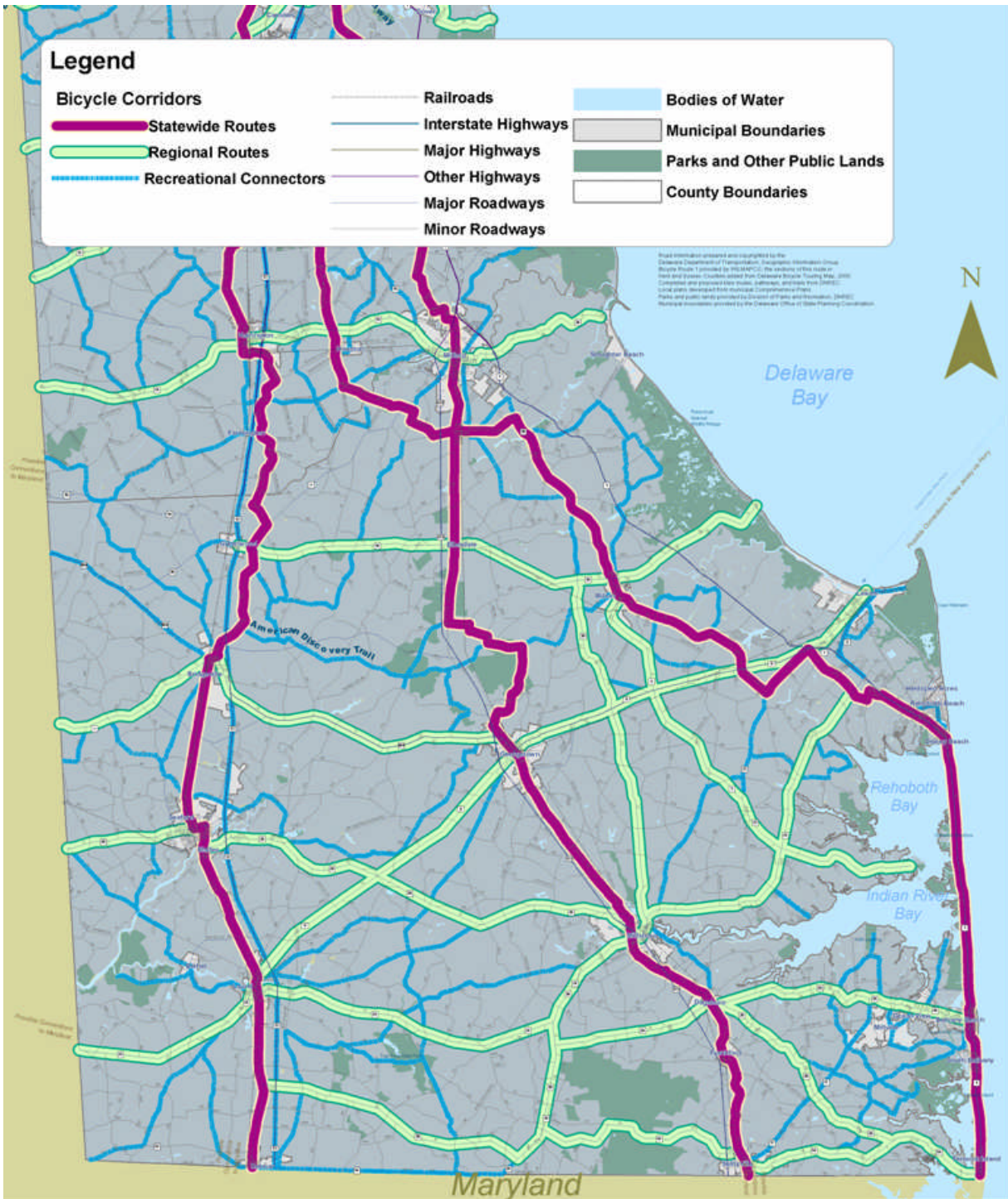
Statewide Bicycle Routes, Regional Bicycle Routes, and Recreational Connectors



The Plan recommends 92 miles of Statewide Bicycle Routes, 102 Regional Bicycle Routes, and 307 miles of Recreational Connectors in Kent County.

Sussex County

Statewide Bicycle Routes, Regional Bicycle Routes, and Recreational Connectors



The Plan recommends 117 miles of Statewide Bicycle Routes, 227 miles of Regional Bicycle Routes, and 366 miles of Recreational Connectors in Sussex County.

Plan Implementation

The key to implementing the Bicycle Facility Master Plan will be to integrate the recommendations into the regular cycle of roadway planning, design, construction, and maintenance.

- **Planning.** DelDOT staff will be aware of the designated bicycle routes early, so that they can begin to evaluate bicycle facilities' impacts on design and right-of-way requirements for a roadway project.
- **Design.** The DelDOT *Road Design Manual* notes that the selection of a facility type should be determined in part by the presence of state and local bicycle master plans. This Facility Plan fulfills that role. Therefore, where a roadway project occurs along a route designated by the Bicycle Facility Master Plan, the project team should apply the appropriate design guidelines for the planned route.
- **Construction.** Making DelDOT construction staff aware of the designated bikeways in the Bicycle Facility Master Plan will improve their understanding of the significance of site-specific bicycle improvements.
- **Maintenance.** The DelDOT *Road Design Manual* provides guidance on pavement treatments regarding the transitions between the travel lane, shoulder, and gutter pan which should be taken into consideration during repaving projects to improve bicycling conditions.

The chart on the following page summarizes stakeholder roles in the plan's implementation.

Stakeholder		Role in Plan Implementation		
		Planning and Development	Design	Construction
DelDOT	Planning - Development Coordination	<ul style="list-style-type: none"> Use Bicycle Facility Master Plan to provide consistent guidance to developers Identify necessary improvement early stages of roadway planning 	<ul style="list-style-type: none"> Ensure developers aware of design standards for designated routes 	
	Transportation Solutions		<ul style="list-style-type: none"> Apply Bicycle Facility Master Plan design standards to designated routes 	<ul style="list-style-type: none"> Ensure improvements developed in planning and design properly implemented in the field
	Maintenance & Operations			<ul style="list-style-type: none"> Ensure repaving, reconstruction, and maintenance projects take into account design standards for bikeways
	Traffic Engineering		<ul style="list-style-type: none"> Consider bicycle crossings when determining timing of signals 	
	Delaware Transit Corporation (DTC)	<ul style="list-style-type: none"> Identify transit facilities suitable for bicycle lockers, bike racks, bikeway connections 		<ul style="list-style-type: none"> Provide bicycle lockers, bike racks at train stations, Park and Ride lots
Local Municipalities		<ul style="list-style-type: none"> Develop local network of Feeder Routes which connect into statewide bicycle network Nominate transportation enhancement (TE) projects to tie Feeder Routes into Statewide and Regional Bicycle Routes 	<ul style="list-style-type: none"> Assist DelDOT in identifying local constraints, opportunities along designated bikeways 	
Delaware Department of Natural Resources and Environmental Control (DNREC)		<ul style="list-style-type: none"> Provide feedback to DelDOT through Council on Greenways and Trails 		
Delaware Bicycle Council		<ul style="list-style-type: none"> Pass along feedback from cyclists using the statewide bicycle network Advise DelDOT on areas requiring improvements Conduct bicycle safety programs 		
Metropolitan Planning Organizations (Dover-Kent MPO, WILMAPCO)		<ul style="list-style-type: none"> Review projects submitted for the Transportation Improvement Project, ensure projects take into account bicycle mobility 		
Delaware State Police Department		<ul style="list-style-type: none"> Provide DelDOT with accurate bicycle accident data to identify conditions and locations requiring bicycle facility improvements 		
Delaware Office of Highway Safety & Homeland Security		<ul style="list-style-type: none"> Pass along feedback from public regarding bicycle safety on DelDOT roadways Conduct bicycle safety programs 		
Delaware Department of Education		<ul style="list-style-type: none"> Work with DelDOT in identifying schools for Safe Routes to School pilot project 		

For more information on the Bicycle Facility Master Plan, please contact
DeIDOT Planning, Statewide and Regional Planning Section at
(302) 760-2121 or www.deldot.net

